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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/859,482	05/18/2001	Mark Verrall	MERCK-1972 D1	5264

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EXAMINER

HON, SOW FUN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 03/20/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/859,482

Applicant(s)

VERRALL ET AL.

Examiner

Sow-Fun Hon

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 14-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/254,185.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: ____

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DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 14-30 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-34 of U.S. Patent No. 6,379,758. Although the conflicting claims are not identical, they are not patentably distinct from each other because the polymer layer composition and structure is recited in various overlapping embodiments.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 14-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Independent claim 14 recites a single layer which exhibits a tilted structure with an optical axis having a tilt angle relative to the plane of the layer. It is unclear:

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- a. How the single polymer layer can exhibit a tilted structure when there is no external plane of reference such as another layer or a substrate;
 - b. What the optical axis is, and to what entity the optical axis belongs to since there can be an infinite number of optical axes all relative to the plane of the layer.
6. The term “optionally” in claims 14, 20 and 22 render said claims and the corresponding dependent claims indefinite since it is unclear what the options actually are. In the sequence of the occurrence of the term, the term should be replaced by “and is”, “where”, “where in each case” and “where in each case” in claim 14, and deleted in claims 20, 22.
7. The term “may be” in claim 14 renders said claim and the corresponding dependent claims indefinite since it is unclear what the options are. It should be replaced by “is/are”.
8. The phrase “cyano or nitro groups or alkyl, alkoxy” in claim 14 renders said claim and the corresponding dependent claims indefinite since it is unclear what the Markush group is. It should be replaced by “cyano, nitro, alkyl groups having 1 to 7 C atoms, alkoxy groups having 1 to 7 C atoms”.
9. The phrase “or alternatively, R is halogen, cyano or has independently one of the meanings given for $P-(S_p-X)_n$ ” in claim 14 renders said claim and the corresponding dependent claims indefinite since it is unclear what the options are. It should be replaced by “or R is from the group consisting of halogen, cyano or one of the embodiments of $P-(S_p-X)_n$ from formula I”.
10. The phrase “R has one of the meanings of $P-(S_p-X)_n$ ” in claim 28 renders said claim indefinite since it is unclear what the “meanings” are. It should be replaced by “or R is from the group consisting of halogen, cyano or one of the embodiments of $P-(S_p-X)_n$ from formula I”.

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Furthermore, said claim should recite “a mixture of components” , instead of simply “a mixture of” . What is it a mixture of?

11. Claim 15 recites a polymer layer wherein the tilt angle in each of said layers varies continuously in a direction normal to the layer, starting from a minimum value at the side of the layer facing the other layer and ranging to a maximum on the opposite side of the layer. There is no antecedent basis for “said layers” and “the other layer” in the parent claim 14.

12. Claim 16 recites the minimum tilt angle of from 0 to 20 degrees. As discussed above, it is unclear exactly what the tilt angle is in terms of the polymer layer since the “tilted structure” is undefined. It follows that it is thus unclear what the minimum tilt angle is. Furthermore, it is unclear how there can be a tilt angle unless it is greater than zero. Claim 17 recites the maximum tilt angle of from 20 to 90 degrees. For the same reasons stated above, it is unclear what the maximum tilt angle is in terms of the polymer layer.

13. Claims 22, 27 recite a “mesoenic” which should be rewritten as “mesogenic”.

Furthermore, claim 27 should recite “a mixture of two or more components”.

14. Claim 29 should recite “the at least one compound in the component a1A) of claim 28” instead of simply “the compound a1A)” since the component a1A) is an amount of at least one compound.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

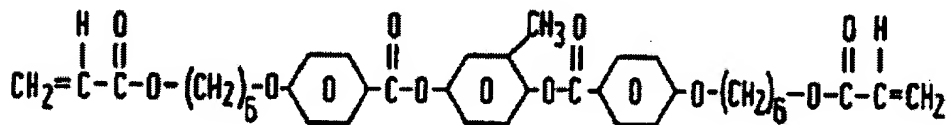
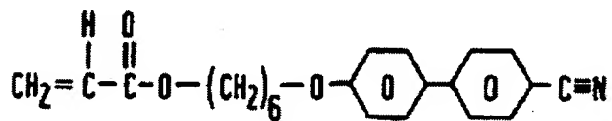
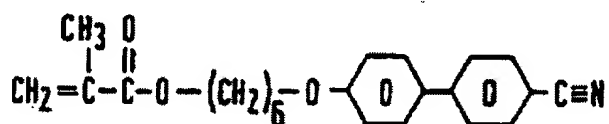
A person shall be entitled to a patent unless –

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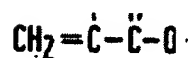
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 14, 19-27, 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Hikmet (US 5,762,823).

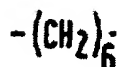
Hikmet has a layer which comprises a product formed from polymerizable mesogenic compounds (monomers) (column 1, lines 40-65) with examples of the structures given below:



P is the polymerizable group



Sp is the spacer group having 1 to 20 C atoms



X is the relevant group of -O-

MG is the relevant group with

m=0, A₂ = 1,4 phenylene, Z₂ = a single bond, A₃ = 1,4 phenylene substituted with a cyano group for the first two structures,

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and $m=1$, $A_1 = 1,4$ phenylene, $Z_1 = \text{COO}$, $A_2 = 1,4$ phenylene substituted with CH_3 , $Z_2 = \text{COO}$, $A_3 = 1,4$ phenylene, and R is $\text{P}-(\text{S}_p-\text{X})_n-$ for the third structure which means that it has two polymerizable groups P .

Hikmet teaches the polymerization of component a1) 30 weight % of mesogen having one polymerizable group and a liquid crystalline group and component a2) 2 weight % of mesogen having two polymerizable groups and a liquid crystalline group, in the presence of an initiator b) in the amount of 1 % (column 3, lines 45-60 and column 5, lines 1-20). The first two monoreactive mesogenic compounds (mesogen having one polymerizable group) shown above have a polar terminal group of CN (cyano), and since it polarizes the electronic density of the mesogen, the examiner has taken the position that the two mesogens are dielectrically positive with a dielectric anisotropy of greater than 1.5.

Hikmet teaches that the mixture is provided with an orientation layer prior to polymerization (column 3, lines 60-70), so that the liquid crystal mesogen is oriented, providing for a tilt angle of at least zero. Hikmet also teaches the liquid crystal display cell with transparent electrodes, and a luminaire comprising a connection for a light source and a cholesteric filter, to enable the color temperature of the emitted light to be adjusted (influenced) (column 3, lines 60-70 and column 4, lines 1-10) which read on a liquid crystal display.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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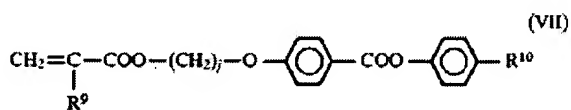
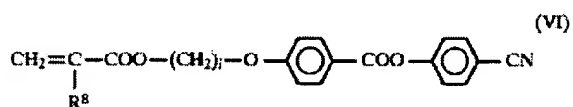
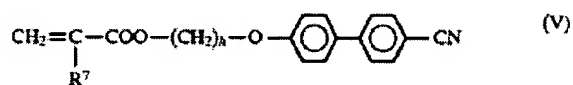
having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 15-18, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hikmet in view of Hasebe et al. (US 5,863,457).

Hikmet has been discussed above, and teaches the polymer layer polymerized from the mixture of mesogens, and the presence of a tilt angle due to the orientation layer. Hikmet is directed to an anisotropic layer (optically active) used in a liquid crystal display device (luminaire comprising such a switchable cholesteric filter) (abstract).

Hikmet, however, fails to teach the tilt angle range from 5 to 80 degrees, or that the tilt angle is made constant or to vary from 0 to 90 degrees. Hikmet also fails to teach the compound in claim 26.

Hasebe et al. teaches an anisotropic polymer layer for a liquid crystal display device from polymerizing mesogens (liquid crystal compounds) with one polymerizable group (monofunctional) (column 5, lines 1-25) such as those shown below:



wherein R^7 , R^8 and R^9 each independently represent a hydrogen atom or a methyl group; h , i and j each independently represent an integer 2 to 12; and R^{10} represents a cyano group or a C_{1-6} alkyl group, a C_{1-6} alkoxy group or a phenyl group, and compounds represented by the following

These mesogens with a single polymerizable group are homologs and recognizable analogs of the mesogens of Hikmet.

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Hasebe et al. teaches a constant tilt angle (homogeneous alignment) of 45 degrees (column 32, lines 50), but that a hybrid alignment which varies continuously (comprising a continuous change) in a direction normal to the layer starting from a minimum value at the side of the layer to a maximum value on the opposite side of the layer (from vertical to horizontal alignment in the thickwise direction) can be obtained (column 17, lines 1-15).


Because Hasebe et al. teaches homologs and recognizable analogs of Hikmet, and is also directed to an anisotropic polymer layer in a liquid crystal display device, it would have been obvious to one of ordinary skill in the art to have used the mesogen with the single polymerizable group and the constant or continuously varying tilt angle technique of Hasebe et al. in the anisotropic layer and liquid crystal display device of Hikmet in order to obtain a liquid display device with the desired display properties.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (703)308-3265. The examiner can normally be reached Monday to Friday from 9:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (703)308-4251. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

8H
Sow-Fun Hon
3/17/03


HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

3/17/03